Unit 17

Western Pacific Bottomfish and Armorhead Fisheries

Introduction

The bottomfish fishery geographically encompasses the Main Hawaiian Islands (MHI), the Northwestern Hawaiian Islands (NWHI), the Territory of Guam, the Commonwealth of the Northern Mariana Islands (CNMI), and the Territory of American Samoa (Table 17-1). In contrast, the pelagic armorhead is harvested from the summits and upper slopes of a series of submerged seamounts along the southern Emperor-northern Hawaiian Ridge. This chain of seamounts is located just west of the international dateline and extends to the northernmost portion of the NWHI.

The Guam, CNMI, Samoa, and MHI fisheries employ relatively small vessels on 1-day trips close to port; much of the catch is taken by either part-time or sport fishermen. In contrast, NWHI species are fished by full-time fishermen in relatively large vessels that range far from port on trips of up to 10 days. Fishermen use the handlining technique in which a single weighted line with several baited hooks is raised and lowered with a powered reel. The bottomfish fisheries are managed jointly by the Western Pacific FMC and territorial, commonwealth, and state authorities.

The seamount fishery for armorhead was initiated by bottom trawl vessels of the former Soviet Union in 1968. During the next year, Japanese trawlers entered this fishery and by 1972 CPUE (based on Japanese data) peaked at some 54 t/hour (Fig. 17-1). From the inception of this fishery to the present, the U.S. has never been a participant in the seamount trawl fishery for armorhead. By the end of 1975, the two fleets had harvested a combined cumulative total of some 1 million mt of armorhead. With the steady decline in CPUE after 1972, the former Soviet fleet left the fishery after 1975. The combined CPUE for all seamounts has remained depressed since the late-1970s. The inclusion in 1977 of the southernmost seamounts (Hancock Seamounts) into the U.S. EEZ allowed for a small portion of the fishery to be managed in a limited way. A Preliminary Management Plan was developed that year which provided for limited foreign harvesting at the Hancock Seamounts under a permit system during 1978-1984. However, catches remained low, all fishing ceased after 1984, and under the bottomfish and seamount groundfish FMP, a 6-year fishing moratorium was imposed on the Hancock Seamounts in 1986. The moratorium was extended for an additional 6-year period in 1992.

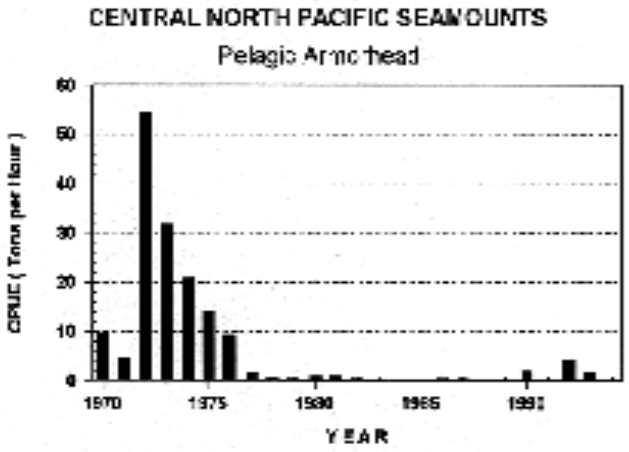


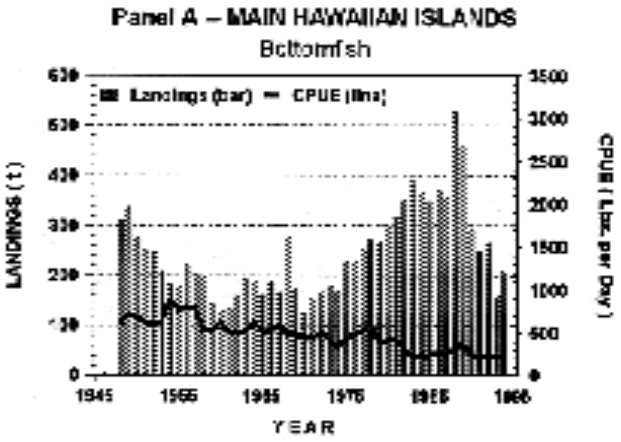
Fig. 17-1. Catch per unit effort of pelagic armorhead taken by Japanese trawl fishery from central North Pacific seamounts.

Table 17-1. Western Pacific Bottomfish and Armorhead

Productivity in metric tons and status of fisheries resources

Species / Area	Recent Average Yield (RAY)[1]	Current Potential Yield (CPY)	Long-Term Potential Yield (LTPY)	Fishery Utilization Level	Stock Level Relative to LTPY
Bottomfish					
MHI	211	211	200	Over	Below
NWHI	139	335	335	Under	Near
America Samoa	7	31	31	Under	Near
Guam	27	25	25	Over	Below
CNMI	4	24	24	Under	Near
Pelagic armorhead	0	0	2,123	Over	Below
Total	388	626	2,738		

[1] 1992-94 average for NHI and NWHI; 1991-93 average for American Samoa, Guam, and CNMI.



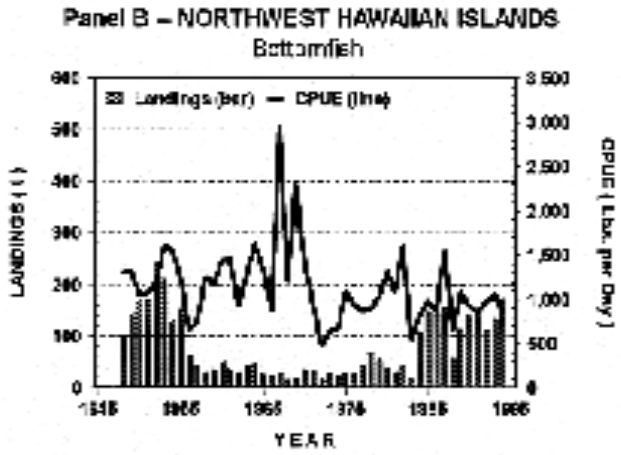


Fig. 17-2. Bottom landings and CPUE at Main Hawaiian Islands (Panel A) and at NW Hawaiian Islands (Panel B)

MHI Bottomfish Landings (t)

1993	158
1994	208

NWHI Bottomfish Landings (t)

1993	133
1994	172

Species and Status

Bottomfish

In Hawaii, the bottomfish species fished include several snappers (ehu, onaga, opakapaka), jacks (ulua, butaguchi), and a grouper (hapu'upu'u), whereas in the more tropical waters of Guam, CNMI, and Samoa the fishes include a more diverse assortment of species within the same families as well as several species of emperors. These species are found on rock and coral bottoms at depths of 50-400 m. Catch weight, size, and fishing effort data are collected for each species in the five areas. However, the sampling programs vary in scope between the areas. About 90% of the total catch is taken in Hawaii, with the majority of the catch taken in the MHI as compared to the NWHI (Fig. 17-2).

Stock assessments, though somewhat limited, indicate that the spawning stocks of several important MHI species (ehu, hapu'upu'u, onaga, opakapaka, and uku) are at only 10-30% of original levels. Onaga presently appears to be the most stressed among MHI bottomfish species.

Pelagic Armorhead

The seamount groundfish fishery targets just one species: the pelagic armorhead. Since 1976, this bottom trawl fishery has been almost exclusively conducted by Japanese trawlers fishing the seamounts located in international waters beyond the Hancock Seamounts. The fishing grounds comprising the Hancock Seamounts represent less than 5% of the total fishing grounds. The long-term potential yield (Table 17-1) is 2,123 t, but recovery to these former levels has not occurred.

Standardized stock assessments were conducted during 1985-1993. Research cruises were focused on Southeast Hancock Seamount and the armorhead stock was sampled with bottom longlines, calibrated against Japanese trawling effort. Catch rates vary but have not shown the increases expected after the fishing moratorium was implemented (Fig. 17-3). Furthermore, the increase in the 1992 seamount-wide CPUE (Fig. 17-1) due to high recruitment was apparently short-lived as CPUE declined appreciably in 1993. Closure of only the small U.S. EEZ portion of the armorhead's demersal habitat may not be sufficient to allow population recovery, because these seamounts remain the only portion of the fishery currently under management.

Issues

Scientific Advice and Adequacy of Assessments

Adequacy of the biological and catch data collected is a primary management concern for the Western Pacific bottomfish fishery. For example, the reproductive biology of many of

the important species in Guam, CNMI, and Samoa is unknown, and spawning stock biomass cannot be computed.

Transboundary Stocks and Jurisdictions

The primary issue for the armorhead seamount fishery is how to implement some form of management on an international basis which would provide conditions more conducive for stock recovery. The recruitment event of 1992 and subsequent stock decline (probably from over-harvesting) reiterate the need to implement some form of management if this fishery is to recover to early-1970s levels.

Management Concerns

The spawning stocks of several important MHI bottomfish species (ehu, hapu'upu'u, onaga, opakapaka, and uku) appear to be at about 10-30% of original levels. Thus, overutilization is a concern, and the Western Pacific FMC has recommended that the State of Hawaii take action to prevent overfishing because the fishery and the bottomfish habitat are predominantly within state waters.

Progress

Researchers continue to identify nursery habitat for juvenile snappers and groupers in Hawaii, and age and growth curves have been extended to include early juvenile stages. Improvements have been implemented for collection of more complete catch-and-effort data from the NWHI fishery. Fishery discard patterns and interactions with sharks and protected species have also been examined in the NWHI fishery.

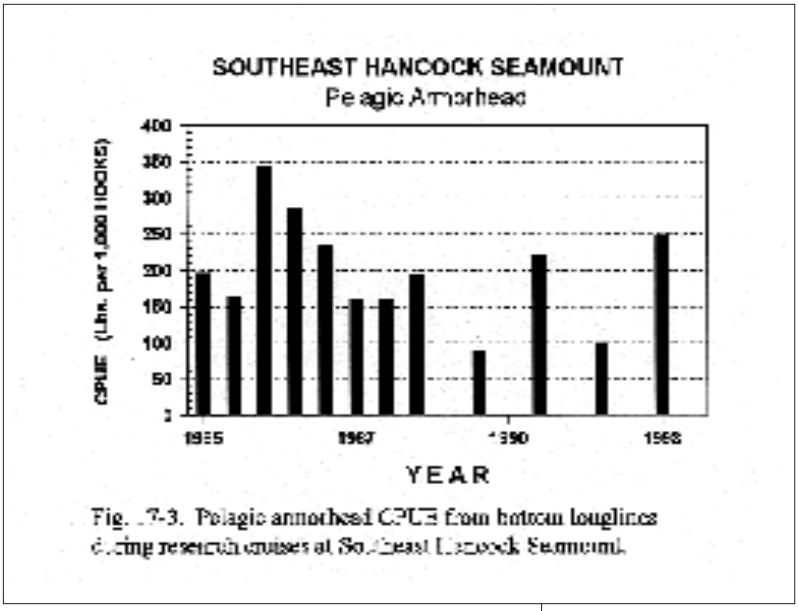


Fig. 17-3. Pelagic armorhead CPUE from bottom longlines during research cruises at Southeast Hancock Seamount.

No progress toward cooperative international management is foreseen for pelagic armorhead. Cooperative exchanges of fishery data with scientific colleagues in Japan have provided annual commercial catch data by seamount. Recently acquired biological data of importance for future management considerations indicate that armorhead undergo a two-year pelagic phase prior to recruitment into the fishery and that the seamount populations comprise a single stock. ❑